84. $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \left[ \sin\left(3x + \frac{\pi}{4}\right) + \cos 2x \right] dx =$

1. $\frac{1}{16}$ 2. 0 3. $\frac{2}{3}\left(2\sqrt{2} - 1\right)$ 4. $1 - \frac{\sqrt{3}}{3} - \frac{5\pi}{12}$ 5. $-\frac{\sqrt{2}}{3}$ (B.–96)

85. Déterminer a et b de façon que : $F(x) = (ax + b)e^x$ soit une primitive de $f(x) = (3x + 2)e^x$

1. a = 1 et b = – 1
2. a = 2 et b = – 4
3. a = 3 et b = – 1
4. a = – 1 et b = 2
5. a = 0 et b = – 1

(M.–96)

86. Soit la fonction $y = (\cos x)^{\sin x}$. La différentielle de y vaut : ( )

1. $dy = \left( \cos x \ln x + \frac{\sin x}{x} \right) (\cos x)^{\sin x} dx$
2. $dy = \left( \frac{\ln x}{\tan x} + \ln x \tan x + \frac{\ln \tan x}{x} \right) (\cos x)^{\sin x} dx$
3. $dy = \left( -\sin x \ln x + \frac{\cos x}{x} \right) (\cos x)^{\sin x} dx$
4. $dy = \left( -\frac{\sin^2 x}{\cos x} + \cos x \ln x \cos x \right) (\cos x)^{\sin x} dx$
5. $dy = \left( \sin x \ln x + \frac{\cos x}{x} \right) (\cos x)^{\sin x} dx$

(M. 96)

87. $\int_0^{\pi/2} \frac{\sin x \, dx}{\sqrt{1 - \cos x}} =$



1. 0 2. 1 3. 2 4. $2\sqrt{2}$ 5. $\sqrt{3}$ (M. 96)

88. $\int \cos^2 x \cos 2x \, dx =$

1. $\frac{1}{4}(x - \cos x + \cos 4x) + C$
2. $\frac{1}{4}(x + \sin 2x + \frac{1}{4}\cos 4x) + C$
3. $\frac{1}{4}(x + \sin 2x + \frac{1}{4}\sin 4x) + C$
4. $\frac{1}{4}(x + \sin x + \frac{1}{4}\cos 4x) + C$
5. $\frac{1}{4}(x + \sin 3x + \frac{1}{4}\cos 4x) + C$

(M. 96)